WHAT IS CLAIMED IS:

1. A system for detecting faults in an optical network, comprising:

a first node and a second node; and

an amplifier node coupled between the first node and the second node, the amplifier node configured to detect a fault on an optical link connecting the amplifier node and the first node and generate a fault report upon detection of the fault, the amplifier node is further configured to forward the fault report to the second node.

2. The system according to claim 1 wherein upon receiving the fault report from the amplifier node, if the second node is capable of switching traffic, the second node initiates a switching action to restore traffic between the first node and the second node; and if the second node is not capable of switching traffic, the second node forwards the fault report to a third node.

3. The system according to claim 2 wherein the fault report is forwarded until the fault report is received by a node which is capable of switching traffic.

4. The system according to claim 1 wherein the second node is capable of switching traffic and is configured to:

detect a fault on an optical link carrying optical signals into the second node; and

upon receipt of the fault report from the amplifier node, prioritize the fault report and the fault detected by the second node.

5. The system according to claim 1 wherein the amplifier node is further configured to receive and pass a fault report from another amplifier node to the second node.

6 . The system according to claim 1 wherein the amplifier node is configured to:

receive a fault report from another amplifier node;

prioritize the received fault report and the generated fault report; and

forward whichever fault report that has a higher priority to the second node.

7. The system according to claim 1 wherein the optical network is a bi-directional line switched ring network.

8. The system according to claim 1 wherein the fault on the optical link is detected based on a loss-of-signal condition.

9. The system according to claim 8 wherein the amplifier node comprises:

an input signal power detector configured to monitor input power of the optical link; and

control logic configured to evaluate output from the input signal power detector to determine if the loss-of-signal condition exists.

10. A method for detecting faults in an optical network having an amplifier node coupled between a first node and a second node, comprising:

detecting a loss-of-signal condition on an optical link carrying optical signals from the first node to the amplifier node;

causing the amplifier node to generate a fault report reporting occurrence of the loss-of-signal condition; and

forwarding the fault report to the second node.

11. The method of claim 10 further comprising:

if the second node is capable of switching traffic, causing the second node to initiate a switching action to restore traffic between the first node and the second node; and

if the second node is not capable of switching traffic, forwarding the fault report from the second node to another node.

12. The method of claim 11 further comprising:

forwarding the fault report until the fault report is received by a node which is capable of switching traffic.

13. The method of claim 10 further comprising:

if the second node is capable of switching traffic, detecting a fault on an optical link carrying optical signals into the second node; and upon receipt of the fault report from the amplifier node, prioritizing the fault report and the fault detected by the second node.

14. The method of claim 10 further comprising:

causing the amplifier node to receive and pass a fault report from another amplifier node to the second node.

15. The method of claim 10 further comprising:

causing the amplifier node to receive a fault report from another amplifier node;

prioritizing the received fault report and the generated fault report; and

forwarding whichever fault report that has a higher priority to the second node.

16. The method of claim 10 wherein the optical network is a bi-directional line switched ring network.

17. An optical network comprising:

a plurality of switching nodes connected to one another, at least one switching node capable of switching traffic; and

a plurality of amplifier nodes;

wherein:

at least one amplifier node is coupled between selective pairs of switching nodes; and

the least one amplifier node is configured to detect a fault on an incoming optical link carrying optical signals into that amplifier node, generate a fault report upon detection of the fault, and forward the fault report to a neighboring node.

18. The optical network of claim 17 wherein:

upon receiving the fault report, if the neighboring node is a switching node, the neighboring node initiates a switching action to restore traffic; and if the neighboring node is not a switching node, the neighboring node forwards the fault report to another node.

19. The optical network of claim 18 wherein the fault report is forwarded until the fault report is received by a switching node.

20. The optical network of claim 17 wherein the at least one switching node is configured to:

detect a fault on an incoming optical link carrying optical signals into that switching node; and

upon receipt of a fault report from an amplifier node, prioritize the received fault report and the fault detected by that switching node.

21. The optical network of claim 17 wherein the at least one amplifier node is further configured to receive and pass a fault report from another amplifier node to a switching node.

22. The optical network of claim 17 wherein the at least one amplifier node is configured to:

receive a fault report from another amplifier node;

prioritize the received fault report and the generated fault report; and

forward whichever fault report that has a higher priority to the neighboring node.

23. The optical network of claim 17 wherein the optical network is a bi-directional line switched ring network.

24. The optical network of claim 17 wherein the fault on the incoming optical link is detected based on a loss-of-signal condition.

25. The optical network of claim 24 wherein the at least one amplifier node comprises:

an input signal power detector configured to monitor input power of the incoming optical link; and

control logic configured to evaluate output from the input signal power detector to determine if the loss-of-signal condition exists.

26. An amplifier node for use in an optical network, comprising:

an input signal power detector configured to monitor input power of an incoming optical link received by the amplifier node; and

control logic configured to:

evaluate output from the signal power detector to determine if a loss-of-signal condition thereby indicating a fault on the incoming optical link; and

generate a fault report reporting the loss-of-signal condition.

27. The amplifier node of claim 26 wherein the control logic is further configured to forward the fault report to a switching node to allow the switching node to initiate a switching action.

28. The amplifier node of claim 26 wherein the control logic is further configured to:

receive a fault report from another amplifier node;

prioritize the received fault report and its own generated fault report; and

forward whichever fault report that has a higher priority to a switching node.

29. The amplifier node of claim 26 wherein the optical network is a bi-directional line switched ring network.